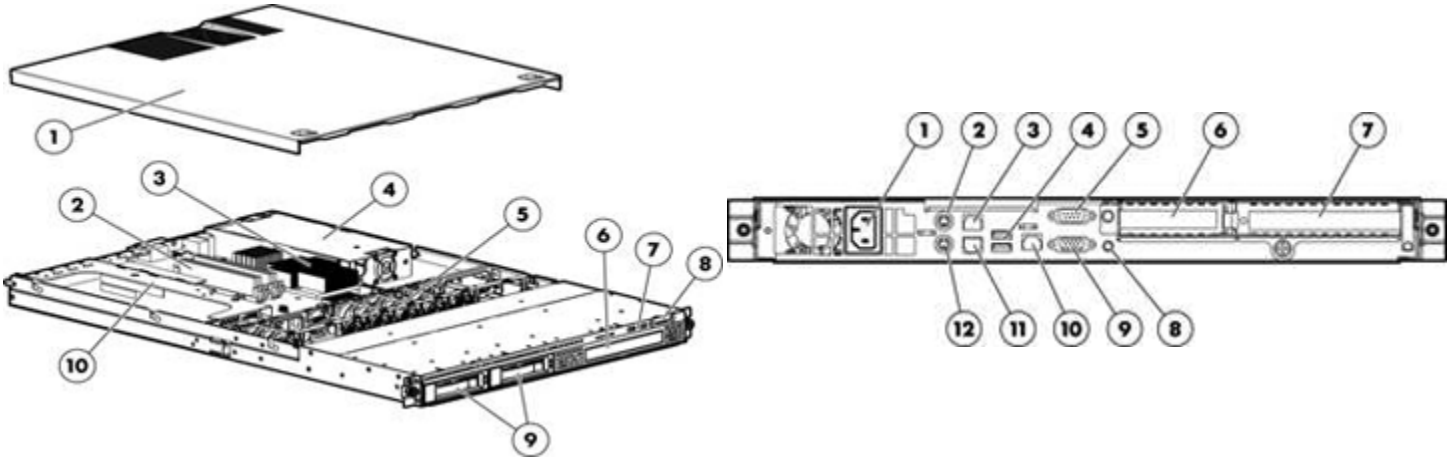
Overview



Front View:

1. Cover
2. Four PC2-6400 ECC DDR2 Memory Slots
3. Processor Socket (Intel® Xeon®, Core™2, Pentium® or Celeron®)
4. Power Supply (400 Watt)
5. Non Hot Plug Dual Rotor Fans
6. Optional 12.7mm DVD-ROM, or DVD-RW Drive for 2 HDD models and optional 9.5mm DVD-ROM, or DVD combo drive for 4-HDD model
7. Two upfront USB connectors
8. Power Button, UID Button, and Front LED Indicators
9. Support for up to four Hot Plug SATA or SAS Hard Drives
10. Two PCI-Express Slots (2 PCI-Express x8 connectors standard)

Rear View:

1. Power supply
2. Mouse connector
3. NIC 2 Port
4. USB connectors (2)
5. Serial connector
6. PCI Express expansion slot 5, low-profile, half-length
7. PCI Express expansion slot 4, (optional PCI-X, full-length)
8. UID button/LED
9. Video connector
10. Dedicated Integrated Lights-Out 2 (iLO 2) management port (optional)
11. NIC 1 Port / Shared iLO 2 Management Port
12. Keyboard connector

What's New

- New Quad-Core Intel Xeon processors with up to 12 MB L2 cache for 1333MHz Front Side Bus
  - Adding to line up of Quad-Core and Dual-Core Intel processors for more performance, flexibility and choice
- Support for low-cost Intel Celeron 440

At a Glance

The HP ProLiant DL320 G5p Server is an enterprise rack-optimized server at an entry level price. The highly manageable 1 processor, 1U server is ideal for single-application IT infrastructure, web and edge-of-network applications. The remote console and virtual KVM offered by the embedded iLO-2, coupled with the management features of SIM and deployment capabilities of SmartStart and other ProLiant Essentials software, give the DL320 G5p enterprise-class management features. Optional upgrades provide support for hot-plug SAS drives and/or up to 4 SAS or SATA drives, and gives the DL320 G5p the flexibility to meet the needs of your datacenter. Plus, you get the cost-effective solution of a single-processor platform with the performance advantages of dual-core or quad-core.

- Processor:
  - Quad-Core Intel® Xeon® 3300 processor sequence
  - Quad-Core Intel® Xeon® 3200 processor sequence
  -
  -

Overview

- Dual-Core Intel® Xeon® 3100 processor sequence
- Dual-Core Intel® Xeon® 3000 processor sequence
- Dual-Core Intel® Core™2 E4600 processor
- Dual-Core Intel® Pentium® E2160 processor
- Single-Core Intel® Celeron® 440 and 420 processors
- Intel® 3210 Chipset with up to 1333MHz Front Side Bus (FSB)

- Memory:
  - Supports up to 8 GB of PC2-6400 (800 MHz) Unbuffered DDR2 ECC SDRAM Memory
  - 4 DIMM sockets
- Storage Controller:
  - 4 Port SATA Controller with RAID 0/1 support
    NOTE: Transfer rate: 1.5Gb/s SATA
- Internal Drive Support:
  - Up to four 3.5" (Large Form Factor) SATA or SAS hard drives
    - Two drive cage standard. Optional 4 HDD cage upgrade kit
    - SAS drives require optional SAS Host Bus Adapter (HBA) or Smart Array Controller
    - Optional hot plug hard drive configuration
  - Internal storage capacity of up to 4TB (4 x 1TB SATA hard drives) with optional 4HDD cage
  - Optional DVD, DVD Combo or DVD-RW drive (depending on 2 or 4 HDD model)
- Network Controller:
  - Embedded NC326i Dual Port Gigabit Server Adapter
- Expansion Slots:
  - Two total slots:
    - (1) Full length PCI Express x8 slot (x8 connector)
  - Can be replaced with a full-length 64-bit /133MHz PCI-X slot
    - (1) Half-length, low-profile PCI Express x1 slot (x8 connector)
      USB 2.0 Ports:
  - Up to 5 Total: (2) front; (1) internal (optional); (2) rear accessible ports
  - Internal USB port (optional) for flexible storage, security, or USB drive key deployment
- Management:
  - HP Insight Control suite delivers essential management, including proactive health management, lights out remote control, optimization of power usage, rapid server deployment, performance analysis, vulnerability scanning and patch management and virtual machine management. For more information, go to: www.hp.com/go/ice.
  - HP ProLiant Onboard Administrator (powered by the Integrated Light-Out 2 management processor) for simplified server setup, health monitoring and recovery, power and thermal control, and lights-out remote administration
  - Integrated Lights-Out 2 Advanced unlocks the full capabilities of the ProLiant Onboard Administrator with high performance Integrated Remote Console, multi-user console sharing, video record and replay, and virtual media, including virtual folders for rapid server updates.
  - System Insight Display on the front bezel for quick and easy server diagnostics
- Operating Systems and Virtualization Software Support for ProLiant Servers:
  - Supports Windows, RHEL, SLES, OEL
- Deployment/Serviceability:
  - Customer Self Repair (CSR): HP products are designed with many CSR parts to minimize repair time and allow for greater flexibility in performing defective parts replacement
  - Fixed, mounting rails included with all models
- Form Factor:
  - 1U (1.70" / 4.32 cm) Rack Mount Chassis
  - 26.85" (68.20 cm) Deep
- Warranty:
  - This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and parts repair is available for three years Next Business Day, with one year on-site support from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Expanded support may be covered under the warranty or available for an additional fee.

Overview

Enhancements to warranty services are available through HP Care Pack services or customized service agreements. SATA hard drives have a one-year warranty.

NOTE: Server Warranty includes three year parts, one year labor, and one year on-site support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at: http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

Standard Features

NOTE: For a brief, printer friendly data sheet that describes this product and informs you of the essential capabilities and specifications, please visit: http://h71028.www7.hp.com/ERC/downloads/4AA1-5500ENW.pdf.
NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

Processor One of the following depending on Model	Quad-Core Processors Quad-Core Intel® Xeon® Processor X3370 (3.0 GHz, 12MB L2 cache, 95 Watts, 1333MHz FSB) NOTE: Available via CTO only. Quad-Core Intel® Xeon® processor X3360 (2.83GHz, 12MB L2 cache, 95 Watts, 1333MHz Front Side Bus (FSB)) NOTE: Available via CTO only. Quad-Core Intel® Xeon® processor X3350 (2.66GHz, 12MB L2 cache, 95 Watts, 1333MHz FSB) NOTE: Available via CTO only. Quad-Core Intel® Xeon® Processor X3330 (2.66 GHz, 6MB L2 cache, 95 Watts, 1333MHz FSB) NOTE: Available via CTO only. Quad-Core Intel® Xeon® processor X3320 (2.50GHz, 6MB L2 cache, 95 Watts, 1333MHz FSB) Quad-Core Intel® Xeon® processor X3220 (2.4GHz, 8MB L2 cache, 95 Watts, 1066MHz FSB) NOTE: Available via CTO only. Quad-Core Intel® Xeon® processor X3210 (2.13GHz, 8MB L2 Cache, 95 Watts, 1066MHz FSB) Dual-Core Processors Dual-Core Intel® Xeon® Processor E3120 (3.16 GHz, 6MB L2 cache, 65 Watts, 1333MHz FSB) NOTE: Available via CTO only. Dual-Core Intel® Xeon® processor E3110 (3.0GHz, 6MB L2 cache, 65 Watts, 1333MHz FSB) Dual-Core Intel® Xeon® processor 3075 (2.66GHz, 4MB L2 cache, 65 Watts, 1333MHz FSB) Dual-Core Intel® Xeon® processor 3065 (2.33GHz, 4MB L2 Cache, 65 Watts, 1333MHz FSB) NOTE: Available via CTO only. Dual-Core Intel® Core™2 processor E4600 (2.4GHz, 2MB L2 cache, 800MHz FSB) NOTE: Available via CTO only. Dual-Core Intel® Core™2 processor E4400 (2.0GHz, 2MB L2 cache, 800MHz FSB) NOTE: Available via CTO only. Dual-Core Intel® Pentium® processor E2160 (1.80GHz, 1MB L2 cache, 800MHz FSB) NOTE: Available via CTO only. Single-Core Processors Single-Core Intel® Celeron® processor 440 (2.00GHz, 512KB L2 cache, 800MHz FSB) NOTE: Available via CTO only. Single-Core Intel® Celeron® processor 420 (1.60GHz, 512KB L2 cache, 800MHz FSB) NOTE: Available via CTO only.

Standard Features

Cache Memory One of the following depending on Model	12 MB L2 Cache NOTE: For Models with Intel® Xeon® processor X3370, X3360 and X3350. 8 MB L2 Cache NOTE: For Models with Intel® Xeon® processor X3220 and X3210. 6 MB L2 Cache NOTE: For Models with Intel® Xeon® processor X3330, X3320, E3120, and E3110. 4 MB L2 Cache NOTE: For Models with the Intel® Xeon® processor 3075 and 3065. 2 MB L2 Cache NOTE: For Models with the Intel® Core2 processor E4600 and E4400. 1 MB L2 Cache NOTE: For Models with the Intel® Pentium processor E2160. 512 KB L2 Cache NOTE: For Models with the Intel® Celeron processor 440 and 420.	
Chipset	Intel® 3210 Chipset	
Memory Protection	ECC	
Memory One of the following depending on Model	Type	PC2-6400 (800MHz) Unbuffered ECC DDR2 SDRAM Interleaving optional (Enabled when DIMMs populated in pairs)
	DIMM Sockets	4
	Standard - Xeon E3110 and Xeon 3075 Models	1 GB (1 x 1 GB)
	Standard - Xeon X3320 and Xeon X3210 Models	2 GB (2 x 1 GB)
	Maximum Memory	8 GB
Network Controller	Embedded NC326i Dual Port Gigabit Server Adapter	

Standard Features

Expansion Slots

Expansion Slots #	Technology	Bus Width ***	Connector Width	Bus Number*	Device No.**	Form Factor	Notes
5 (Standard)	PCIe	x1	x8	10	0	Low profile (half length, half height) slot	
4 (Standard)	PCIe	x8	x8	21	0	Full length, full height slot	This PCIe slot can be replaced with optional PCI-X slot below
4 (Optional)	PCI-X (133MHz, 3.3Volt)	64-bit	Not applicable	24	4	Full length, full height slot	

* Default bus assignment (in decimal). Inserting cards with PCI bridges may alter the actual bus assignment number.
** Slots are enumerated differently based on OS. MS OS's enumerate from lowest to highest Device ID by bus (starting with the lowest bus).
*** Indicates the number of physical electrical lanes running to a PCI-e connector.

Storage Controllers	Integrated Intel® 82801IR Serial ATA Host Controller with RAID 0/1 support. Hot Plug SAS and SATA controllers available via PCI card option.		
Storage	Optical Drive	Optional 2 HDD Models: 12.7mm DVD-ROM, or DVD-RW Drive 4 HDD Models: 9.5mm DVD-ROM, or DVD combo drive	
	Hard Drives One of the following depending on Model	Hard Drives - Hot Plug SATA/SAS	Up to 2 or 4 hot plug SATA or SAS 3.5" drives NOTE: Hot-plug and/or SAS support requires optional HBA or Controller card.
Maximum Internal Storage	SATA (2HDD models - standard)	2.0TB	2 x 1TB SATA
	SATA (4HDD models - requires optional 4HDD cage)	4.0TB	4 x 1TB SATA
	SAS (2HDD models standard - requires optional PCI controller)	2.0TB	2 x 1TB SAS
	SAS (4HDD models - requires optional 4HDD cage and PCI controller)	4.0TB	4 x 1TB SAS
Type			

Standard Features

Interfaces	Serial	1
	USB 2.0	5 (2 front, 1 internal (optional), 2 rear) NOTE: Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html
	Graphics	1 (rear)
	Keyboard	1
	Mouse	1
	Network RJ-45	2 (NIC 1 shared iLO 2 port)
	Dedicated iLO 2 remote management port	1 (optional)

Graphics

Integrated ATI ES1000, 32 MB video standard

- 16 bit color: maximum resolution of 1600 x 1200
- 32 bit color: maximum resolution of 1280 x 1024

NOTE: Maximum resolution available via iLO 2 remote console is 1280 x 1024.

Form Factor

Rack (1U), (1.70 in/4.32 cm), 26.85" deep

HP Insight Control suite

HP Insight Control suite delivers essential infrastructure management, including proactive health management, lights out remote control, optimization of power usage, rapid server deployment, performance analysis, vulnerability scanning and patch management and virtual machine management.

HP Insight Control suite installs and licenses the following components by default using a wizard-based integrated installer:

- HP Systems Insight Manager software
- HP iLO Advanced Pack
- HP Insight Power Manager software
- HP Insight Performance Manager module
- HP Insight Vulnerability and Patch Manager module
- HP Insight Virtual Machine Manager software for ProLiant

Additional Insight Software standalone products and management tools included on the Insight Software media kit can be installed manually:

- HP Insight Server Migration software for ProLiant
  NOTE: HP Insight Server Migration software for ProLiant is licensed separately from the Insight Control suite.
- HP Open Service Event Manager
- HP Service Essentials Remote Support Pack

NOTE: Insight Server Migration software for ProLiant can be installed from the SMP CD included in the Insight Software media kit.
NOTE: For additional product and licensing information about HP Insight Controlsuite, visit:
http://www.hp.com/go/ice.

Standard Features

NOTE: As of Feb. 1, 2009, HP iLO Power Management Pack is being discontinued. Customer can either purchase HP Insight Control Environment suite which contains all the components of IPMP or the standalone components which include iLO Advanced, Insight Power Manager and System Insight Manager.

HP Insight Control suite for Linux (ICE-Linux) provides comprehensive discovery, imaging & deployment, monitoring, and management for Linux-based ProLiant server platforms. Built on the industry-leading HP Systems Insight Manager framework, this solution integrates open source technology with experience leveraged from HP's Linux products in HP ICLE and HP XC Clusters, while providing paths to the future with developing management technologies.

HP Insight Control suites and most Insight software standalone products include a one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: http://www.hp.com/services/insight.

HP ProLiant Onboard Administrator

HP ProLiant Onboard Administrator (powered by the Integrated Lights-Out 2 management processor) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP ProLiant Onboard Administrator functions without additional software, and can be accessed from any location via a web browser. It works hand-in-hand with HP Systems Insight Manager, Insight Control, and Insight Dynamics - VSE suite helping customers unlock the value of the ProLiant platform and deliver the highest possible quality of IT service to the business.

Capabilities of the HP ProLiant Onboard Administrator embedded in ProLiant ML/DL servers include, but are not limited to the following:

- Rom-based Setup Utility (RBSU) and Option Rom Configuration for Arrays (ORCA)
- IML and iLO event logging
- Automatic Server Recovery (ASR)
- OS independent hardware health status
- Present server power consumption
- Virtual Unit ID control
- Remote serial console
- Virtual power button control
- Dynamic Sector Repairing (with Smart Array controller)
- Drive Parameter Tracking (with Smart Array controller)
- Hot Spare Boot
  NOTE: Upon the event of a failed processor in a multi-processing environment, the system will automatically reboot and attempt to use the remaining good processor.

Unlock the full remote administration capabilities of HP ProLiant Onboard Administrator with Integrated Lights-Out 2 Advanced.

Standard Features

Server Management Stand Alone Software Products	HP Systems Insight Manager software	HP Systems Insight Manager software (HP SIM) provides a unified, secure and extensible standards-based environment to centrally manage servers, storage and other infrastructure devices, (both HP and non-HP) across multiple operating system platforms. For additional information, please see: www.hp.com/go/insight
	HP Insight Rapid Deployment software	Insight Rapid Deployment software (RDP) extends HP Systems Insight Manager with a complete deployment solution for HP ProLiant servers. RDP provides a central location to configure server hardware, deploy Windows, Linux and VMware ESX operating environments and install HP ProLiant Support Pack drivers using images and scripted profiles. For more information, visit: http://www.hp.com/go/rdp.
	HP Insight Server Migration software for ProLiant	Upgrading, replacing, or virtualizing your existing server? Effortlessly transition to new virtual or physical HP ProLiant servers or BladeSystem with automated, accurate and affordable migration of OS, application and data. Insight Server Migration software for ProLiant (SMP) automates the manual processes required for migrating servers between physical or virtual platforms, whether migrating to VMware or Microsoft virtual machines. Insight Server Migration software for ProLiant allows all of the following migrations: • physical to ProLiant • physical to virtual • virtual to virtual • virtual to ProLiant NOTE: For more information, visit: http://www.hp.com/go/migrate.
	HP Insight Dynamics - VSE suite for ProLiant	The HP Insight Dynamics - VSE suite for ProLiant is advanced infrastructure management software that allows you to analyze and optimize your adaptive infrastructure to manage physical and virtual resources in the same way. HP Insight Dynamics - VSE suite for ProLiant gives you a powerful toolkit to accelerate complex technology projects and simplify daily operations. It enables you to plan capacity and power continuously, balance across physical and virtual resources, ensure cost-effective high availability and provision infrastructure consistently. NOTE: For more information, visit: http://www.hp.com/go/insightdynamics
	HP Integrated Lights-Out (iLO) Advanced Pack	Unlocks the full capabilities of the ProLiant Onboard Administrator with comprehensive remote control including Virtual KVM remote graphical console, power management capabilities such as power measurement, regulation, and capping, new iLO Text Console, automatic and on-demand video recording of server events, global team collaboration for up to four remote users, virtual media (floppy, CD/DVD, USB key), virtual folders, and enterprise security (directory services and two-factor authentication). For additional information, please see: www.hp.com/go/iLO

NOTE: Flexible and volume quantity license kits are available for Value Packs. Refer to: http://www.hp.com/servers/insightcontrol or the various Insight software product QuickSpecs for more information.

Standard Features

Core Infrastructure Management	HP Foundation Pack	Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex Datacenters. HP provides management solutions that are designed to simplify a server's installation, configuration and maintenance throughout the entire server lifecyle. This provides the customer with higher levels of operational efficiency and highly reliable systems: www.hp.com/go/foundation. The foundation pack includes: • HP SmartStart • HP Management • HP ProLiant Firmware Maintenance SmartStart version supported (minimum): SmartStart 7.90 http://www.hp.com/servers/smartstart
	Insight Management Agents	The Insight Management Agents should be installed on all HP servers to present system instrumentation, health and configuration information into HP Systems Insight Manager and the HP System Management Homepage. The HP System Management Homepage aggregates systems data from Insight Management Agents and other HP management tools, providing a consolidated browser-based interface for managing individual servers. Insight Management Agents and The HP System Management Homepage are included on ProLiant Support Packs, and can also be installed using the server profiles provided with the Rapid Deployment Pack. For additional information about the Management Agents and the HP System Management Homepage please visit the management Web site at: http://www.hp.com/servers/manage.
	Subscriber's Choice	Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides software and driver change notifications for ProLiant products. Sign up at: http://www.hp.com/go/subscriberschoice and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis.
	ProLiant Support Packs and ROMPaq, software	The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options, available through ProLiant Support Packs the Rapid Deployment Pack, SmartStart or downloaded from software and drivers download pages website at: http://www.hp.com/go/support.

HP Serviceguard for Linux (SGLX)	HP Serviceguard for Linux is a high availability clustering solution designed to protect applications and services from a wide variety of software and hardware failures, monitoring the health of each server (node) and quickly responding to failures such as those that affect system processes, system memory, LAN media and adapters, and application processes. The following is a quick summary of HP Serviceguard for Linux features and support. For the most recent list of Linux distributions & kernels, servers and storage supported with Serviceguard for Linux, see the Serviceguard for Linux Datasheet, available at: http://www.hp.com/go/sglx/info. • Supported Linux Distributions:

  - Red Hat EL 4
  - Red Hat EL 5
  - SUSE SLES10
- Supported Server Platforms
  - HP Integrity BladeSystem to Superdome
  - HP ProLiant BladeSystem p-Class & c-Class
  - HP ProLiant DL
  - HP ProLiant ML
  - IBM System x
  - Dell PowerEdge
  - Sun x64
  - Fujitsu Siemens PRIMERGY
- Supported Virtual Machines
  - SG/LX in HP Integrity Virtual Machines guests
  - SG/LX in VMware ESX guests
  - SG/LX in Red Hat and SUSE Xen hosts (DOM0)
- Application Integration Toolkits
  - HP Serviceguard for Linux Oracle Database Toolkit
  - HP Serviceguard Extension for SAP on Linux (SGeSAP/LX)
  - Free Application Integration Toolkits:
    - Apache
    - MySQL
    - NFS
    - PostgreSQL
    - Samba
    - Tomcat
    - Sendmail
- Disaster Tolerant Solutions
  - HP Serviceguard for Linux Extended Distance Cluster (XDC) extends cluster distances up to 100 km, utilizes software RAID mirroring for data replication and is storage array independent
  - HP StorageWorks XP/EVA Cluster Extension Software for Linux (CLX) works seamlessly with HP Serviceguard for Linux, HP StorageWorks Continuous Access, and HP Disk Arrays to automate failover and failback between sites
- Software updates are distributed by HP Services to customers with support contracts

NOTE: For additional information on HP Serviceguard for Linux, visit: http://www.hp.com/go/sglx or see the HP Serviceguard for Linux QuickSpecs.
NOTE: HP Serviceguard for Linux products for HP ProLiant and select 3rd party x86 class servers include one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: http://www.hp.com/services/swsupport.

Standard Features

Industry Standard Compliance	ACPI 2.0 PCI 3.0 Compliant PXE Support WOL Support Microsoft® Logo certifications USB 2.0 IPMI 2.0 NOTE: iLO 2 management processor monitors fans, temperature sensors, power supply sensors and Vrms without having the System Management Driver loaded. In addition to reporting sensor status from all iLO 2 interfaces, the management processor also reports sensor status to the operating system through an IPMI 2.0 specified interface.
Intelligent Manageability	Automatic Server Recovery (ASR) iLO 2 Advanced Pack (optional) HP Systems Insight Manager Integrated Management Log Drive Parameter Tracking (with Smart Array Controllers) Dynamic Sector Repairing (with Smart Array Controllers) Pre-Failure Warranty (covers processors, SAS hard drives, and memory) BIOS Serial Console Front and Rear Unit ID (UID) button/LED
Security	Power-on password Keyboard password USB Port control Removable optical drive assembly (optional) Removable DVD-ROM Drive Assembly (optional) Dedicated iLO2 port (optional) Administrator's password
Server Power Cords	North America: One 6' Highline (IEC-IEC) power cord ships standard Japan: One 6' Highline (IEC) power cord and one 6' Lowline power cord ship standard ROW: One 6' Highline (IEC) power cord ships standard NOTE: HP ProLiant DL320 G5p servers hip standard worldwide with a C13 to C14 2M Highline jumper cord. Japanese models also include a 2M Lowline power cord. If customers require a local power cord, they can check the power cord matrix for the appropriate country specific cord. Please see the following power cord matrix: http://www.hp.com/go/powercordmatrix.
Power Supply	Auto-sensing 400-Watt PFC Power Supply, CE Mark Compliant
UPS and PDU Power Cord Matrix	Please see the UPS and PDU cable matrix that lists cable descriptions, requirements, and specifications for UPS and PDU units: http://h18004.www1.hp.com/products/servers/proliantstorage/power-protection/index.html

Standard Features

System Fans	3 dual rotor fans ship standard with X3370, X3360, X3350, X3330, X3320, and E3120, E3110 models. 4 dual rotor fans ship standard with all other models (e.g. X3220, X3210, 3075, 3065, E4600, E4400, E2160, 440 and 420 models).
Ultra Thin Rack Deployment Overview	For the Ultra Thin Rack Deployment Overview, including best practices for the HP ProLiant DL320 G5p, please see the following URL: www.hp.com/servers/proliantdl320-g5p.
Required Cabling	For required cabling information, refer to the Web site at: www.hp.com/servers/proliantdl320-g5p.
Operating Systems and Virtualization Software Support for ProLiant Servers	Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) Oracle Enterprise Linux (OEL) NOTE: Support differences will exist between the SATA and SAS configurations. NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: http://www.hp.com/go/ossupport and our driver download site www.hp.com/support/DL320G5p.
Rack Airflow Requirements	Rack 10000 series Cabinets The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors. CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment: • Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 5,350 sq cm (830 square inches) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation). • Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 inches) CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage. NOTE: For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: www.hp.com/servers/proliantdl320-g5p.
Rack Kit	The DL320 G5p Fixed Rail System supports installation in racks with square or round mounting holes (including Compaq/HP 7000, 9000, 10000 and HP series), with an adjustment range of 24" - 36". Installation into Telco 2 post, and 4 post, or threaded holes racks requires a 3rd party option kit. Go to: www.racksolutions.com for more information.

Standard Features

HP Factory Express Capabilities

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services for your specific server model please contact your sales representative or go to: http://www.hp.com/go/factory-express.

Service and Support

HP Care Pack Services provide total care and support expertise with committed response times designed to meet your IT and business needs.

HP Care Pack services include coverage for the HP branded hardware options qualified for the server that are purchased at the same time or afterward and internal to the enclosure. It also includes the 22-inch and smaller external monitors and tower UPS options up to 3kVA. These items will be covered at the same service level and for the same coverage period as the server. Coverage of UPS Battery is not included and standard warranty terms & conditions apply. For servers or storage systems installed within a rack, service also covers all HP qualified rack options installed within the same rack.

To fully capitalizing on your HP ProLiant servers' capabilities requires a service partner who thoroughly understands your server technology and systems environment. HP Services, an industry leader in provision of support solutions provides a range of support services designed to meet the varying needs of your business. Whether an SMB, or large global corporation, HP has ProLiant server support offers to help you speedily deploy and maximize system uptime.

Recommended Service - simplify ProLiant solution implementation, maintenance, and management.

- Support - 3 Year 9x5 Next Business Day coverage, excluding HP holidays only
- Deployment Service - HW Installation only

Enhanced Service - optimize service level to increase IT performance and availability.

- Support - 3 Year 13x5 Same Business Day, 4-Hour response coverage only
- Deployment Service - Installation and Start up only

Refer to the information on the Installation of a ProLiant on the ProLiant Data Sheet; to be delivered on a scheduled basis 8am-5pm, M-F, excluding HP holidays.

NOTE: For a complete listing of service offerings and information visit:
http://www.hp.com/services/proliantservices
http://www.hp.com/go/proliant/carepack

Models

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

DL320 G5p X3320 2GB 445431-xx1	Processor	Quad-Core Intel® Xeon® processor X3320 (2.50GHz, 6MB L2 cache, 95 Watts, 1333MHz FSB)
	Cache Memory	6MB L2 Cache
	Chipset	Intel® 3210 Chipset
	Memory	2 GB (Standard) to 8 GB (Maximum) of ECC PC2-6400 Unbuffered DDR2 SDRAM Memory
	Network Controller	Embedded NC326i Dual Port Gigabit Server Adapter
	Storage Controller	Intel® 82801IR Integrated Serial ATA Host Controller
	Hard Drives	None ship standard
	Internal Storage	SAS: 4.0TB maximum; SATA: 4.0TB maximum NOTE: SAS requires optional PCI Controller.
	Optical Drive	Optional
	Power Supply	Auto-sensing 400-Watt PFC Power Supply, CE Mark Compliant
	Fans	(3) dual rotor fans ship standard
	Form Factor	Rack (1U), (1.70 in/4.32 cm)

DL320 G5p X3210 2GB 445434-xx1	Processor(s)	Quad-Core Intel® Xeon® processor X3210 (2.13GHz, 8MB L2 cache, 95 Watts, 1066MHz FSB)
	Cache Memory	8MB L2 Cache
	Memory	2 GB (Standard) to 8 GB (Maximum) of ECC PC2-6400 Unbuffered DDR2 SDRAM Memory
	Network Controller	Embedded NC326i Dual Port Gigabit Server Adapter
	Storage Controller	Intel® 82801IR Integrated Serial ATA Host Controller
	Hard Drives	None ship standard
	Internal Storage	SAS: 4.0TB maximum; SATA: 4.0TB maximum NOTE: SAS requires optional PCI Controller.
	Optical Drive	Optional
	Power Supply	Auto-sensing 400-Watt PFC Power Supply, CE Mark Compliant
	Fans	(4) dual rotor fans ship standard
	Form Factor	Rack (1U), (1.70 in/4.32 cm)

Models

DL320R05p E3110 1G 445432-xx1	Processor(s)	Dual-Core Intel® Xeon® processor E3110 (3.0GHz, 6MB L2 cache, 65 Watts, 1333MHz FSB)
	Cache Memory	6MB L2 Cache
	Memory	1 GB (Standard) to 8 GB (Maximum) of ECC PC2-6400 Unbuffered DDR2 SDRAM Memory
	Network Controller	Embedded NC326i Dual Port Gigabit Server Adapter
	Storage Controller	Intel® 82801IR Integrated Serial ATA Host Controller
	Hard Drives	None ship standard
	Internal Storage	SAS: 4.0TB maximum; SATA: 4.0TB maximum NOTE: SAS requires optional PCI Controller.
	Optical Drive	Optional
	Power Supply	Auto-sensing 400-Watt PFC Power Supply, CE Mark Compliant
	Fans	(3) dual rotor fans ship standard
	Form Factor	Rack (1U), (1.70 in/4.32 cm)

Country Code Key	xx=00	North America
	xx=20	Brazil
	xx=29	Japan
	xx=37	APD (Asia excluding Japan)
	xx=42	EURO (Europe / Middle East / Africa)
	xx=AA	PRC

Configuration Information - Factory Integrated Models

NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on CTO product offerings and requirements.
NOTE: HP does not allow factory integration of options into standard models listed above. Configure-to-order servers must start with a CTO Chassis.
NOTE: FIO indicates that this option only available as a Factory Installable Option.

Step 1: Base Configuration (choose one of the following configurable models)

Models	DL320G5p CTO (Configure-To-Order) Chassis	445436-B21
	Includes:	
	Embedded NC326i Dual Port Gigabit Server Adapter	
	1 full length PCI Express x8 slot and 1 half length low profile PCI Express x8 slot	
	Integrated Lights-Out 2 (iLO 2) embedded (shared NIC functionality standard)	
	Intel® 82801IR Integrated Serial ATA Host Controller	
	Rack (1U) form factor, (1.70 in/4.32 cm)	
	Fixed, mounting rails	

Step 2: Choose Required Options (only one of the following from each list unless other noted)

Processors	Single-Core Processors	
	Intel® Celeron 420 processor FIO Kit	450125-L21
	Intel® Celeron 440 processor FIO Kit	468963-L21
	Dual-Core Processors	
	Dual-Core Intel® Pentium E2160 Processor FIO Kit	455035-L21
	Dual-Core Intel® Xeon® 3065 processor FIO Kit	450143-L21
	Dual-Core Intel® Xeon® E3110 processor FIO Kit	463436-L21
	Dual-Core Intel® Xeon® E3120 processor FIO Kit	493241-L21
	Quad-Core Processors	
	Quad-Core Intel® Xeon® X3210 processor FIO Kit	455031-L21
	Quad-Core Intel® Xeon® X3220 processor FIO Kit	450141-L21
	Quad-Core Intel® Xeon® X3320 processor FIO Kit	463434-L21
	Quad-Core Intel® Xeon® X3330 processor FIO Kit	493243-L21
	Quad-Core Intel® Xeon® X3350 processor FIO Kit	463432-L21
	Quad-Core Intel® Xeon® X3360 processor FIO Kit	489909-L21
	Quad-Core Intel® Xeon® X3370 processor FIO Kit	493247-L21
Drive Cage	DL1U 2 DRV CAGE FIO Kit	450436-B21
	DL1U 4 DRV CAGE FIO Kit	450434-B21
Memory	2 GB Unbuffered PC2-6400 ECC DIMM (1 x 2 GB)	450260-B21
	1 GB Unbuffered PC2-6400 ECC DIMM (1 x 1 GB)	450259-B21
	512 MB Unbuffered PC2-6400 ECC DIMM (1 x 512 MB)	450258-B21

Step 3: Choose Additional Factory Integratable Options (only one of the following from list unless otherwise noted)

SAS HBAs	HP SC44Ge Host Bus Adapter NOTE: When using the SC44Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required. Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS.	416096-B21
	HP 8 Internal Port SAS HBA with RAID NOTE: Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS. NOTE: Any SAS HBA CTO purchase automatically includes the HP HBA SAS-SATA 4x1LN Cable Kit (452130-B21).	347786-B21
Controllers	HP Smart Array E200/128 BBWC Controller	411508-B21
	HP Smart Array P400/256MB Controller	405132-B21
	HP Smart Array P400/512MB BBWC Controller	411064-B21
	HP Smart Array E500/256MB Controller	435129-B21
	HP Smart Array P800/512MB BBWC Controller	381513-B21
	NOTE: Any Smart Array Controller CTO purchase automatically includes the HP HBA SAS-SATA 4x1LN Cable Kit (452130-B21).	452130-B21

Step 4: Choose Additional Options for Factory Integration

NOTE: For additional options, please refer to the "Core Options" and "Additional Options" section below.

Core Options

NOTE: Some options may not be factory integratable. Contact your local sales representative for additional information.

ProLiant DL320 G5p Unique Options	DL320G5p PCI-X RISER BD	450341-B21
	DL320G5p iLO2 PORT OPT KIT NOTE: For dedicated port functionality.	450343-B21
	DL1U 4 DRV CAGE KIT	450434-B21
Memory (DIMMs)	2 GB Unbuffered PC2-6400 ECC DIMM (1 x 2 GB)	450260-B21
	1 GB Unbuffered PC2-6400 ECC DIMM (1 x 1 GB)	450259-B21
	512 MB Unbuffered PC2-6400 ECC DIMM (1 x 512 MB)	450258-B21
Optical Drives	HP Slim SATA DVD-ROM Optical Drive	481041-B21
	HP Slim SATA DVD RW Optical Drive	481043-B21
	HP 9.5mm SATA DVD-ROM Optical Drive	481045-B21
	HP 9.5mm SATA DVD RW Optical Drive	481047-B21
Hard Drives	NOTE: Transfer rates of drives are dependent on the maximum transfer rate supported by the HBA or Controller. Refer to the HBA or Controller technical specifications for details.	
	SAS Hot Plug 3.5" Enterprise (ENT) Drives	
	HP 450GB 3G 15K 3.5" DP SAS ENT HDD	454232-B21
	HP 400GB 3G 10K 3.5" DP SAS ENT HDD	459508-B21
	HP 300GB 3G SAS 15K 3.5" SP HDD	431944-B21
	HP 300GB 3G SAS 15K 3.5" DP HDD	416127-B21
	HP 146GB 3G SAS 15K 3.5" SP HDD	375872-B21
	HP 146GB 3G SAS 15K 3.5" DP HDD	384854-B21
	HP 72GB 3G SAS 15K 3.5" SP HDD	375870-B21
	HP 72GB 3G SAS 15K 3.5" DP HDD	384852-B21
	NOTE: Serial Attached SCSI - SAS Hard Drives are only supported with optional SAS HBA or RAID cards. NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html (Worldwide)	
	SAS Hot Plug 3.5" Midline (MDL) Drives	
	HP 1TB 7.2K 3.5" DP SAS MDL HDD	461137-B21
	HP 750GB 7.2K 3.5" DP SAS MDL HDD	461135-B21
	SATA Hot Plug Midline (MDL) Drives	
	HP 1TB 3G SATA 7.2K 3.5" MDL HDD	454146-B21
	HP 750GB 3G SATA 7.2K 3.5" MDL HDD	458930-B21
	HP 500GB 3G SATA 7.2K 3.5" MDL HDD	458928-B21
	HP 250GB 3G SATA 7.2K 3.5" MDL HDD	458926-B21

Core Options

	NOTE: Server BIOS update is required to support 3G SATA Drives when configured with embedded SATA Controller. Please see communication for details: http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=c01511475	
	SATA Hot Plug Entry (ETY) Drives	
	HP 160GB 3G SATA 7.2K 3.5" ETY HDD	458945-B21
	NOTE: Server BIOS update is required to support 3G SATA Drives when configured with embedded SATA Controller. Please see communication for details: http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=c01511475	
	NOTE: SATA hard drives have a 1-year warranty. Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html (Worldwide)	
	3.5" SATA Hot Plug Drives	
	HP 750GB 1.5G SATA 7.2K 3.5" HDD	432341-B21
	HP 500GB 1.5G SATA 7.2K 3.5" HDD	395473-B21
	HP 250GB 1.5G SATA 7.2K 3.5" HDD	349239-B21
	HP 160GB 1.5G SATA 7.2K 3.5" HDD	349238-B21
	NOTE: The previous generation of 1.5G SATA drives are still supported. These drives can be purchased as an option, however they are no longer configurable.	
	NOTE: SATA hard drives have a 1-year warranty. Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/11940_div/11940_div.html (Worldwide)	
Communications	HP NC110T PCI Express Gigabit Server Adapter	434905-B21
	HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
	HP NC364T PCI Express Quad Port Gigabit Server Adapter	435508-B21
	HP NC373F PCI Express Multifunction Gigabit Server Adapter	394793-B21
	HP NC373T PCI Express Multifunction Gigabit Server Adapter	394791-B21
	HP NC380T PCI Express Dual Port Multifunction Gigabit Server Adapter	394795-B21
	NOTE: Supported on a Full Length-Full Height slot only.	
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs.	

Additional Options

HP Insight Control Environment	NOTE: Electronic licensing options are available for Insight Control suites software products. Please see the appropriate Insight Control QuickSpecs for additional information. www.hp.com/go/ice	
	HP Insight Control Environment	
	HP Insight Control Environment, No Media 1-Server License including 1 year of 24x7 Technical Support and Updates NOTE: This part number can be purchased as a single license or as multiple licenses with a single activation key. Customer will receive a license entitlement certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. Only available directly from HP and select resellers in the Americas region.	452148-B22
	HP Insight Software Media Kit NOTE: Insight Software DVD media without licenses. Contains Systems Insight Manager and Insight software products and components licensed by Insight Control suite. Uses an integrated installer to perform quick and accurate software installation and updates.	436222-B21
	NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html	
	HP Insight Control suite for Linux	
	HP Insight Control suite for Linux, Media pack (DVD) - No licenses included NOTE: This optional Media pack DVD contains the ISO image for HP Insight Control suite for Linux, HP System Insight Manager software, HP Insight Power Manager software, HP Insight Virtual Machine Manager software for ProLiant, and an integrated installer. Servers must be acquired separately. NOTE: This Media pack is optional because the latest ISO image and latest updates may be downloaded at no cost from: http://www.hp.com/go/ice-linux (click on Download button).	464422-B22
	HP Insight Control suite for Linux, No Media, 1-Server license, including one year of 24x7 Technical Support and Updates NOTE: This part number can be used to purchase one (1) license with a single activation key. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. NOTE: One certificate is shipped for each license.	464423-B22
	NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html	
Server Management Stand Alone Software Products	NOTE: Electronic licensing options are available for select software products. Please see the appropriate Insight Software standalone product QuickSpecs for additional information.	
	Deploy	
	HP Insight Rapid Deployment software	
	HP Insight Rapid Deployment software No Media 1-Server License including 1 year of 24x7 Technical Support and Updates NOTE: This license allows 1 server to be deployed and managed via RDP. Customer will receive a printed license entitlement certificate via physical shipment. The license	452151-B21

entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service
NOTE: For additional License Kits, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/11053_div/11053_div.html

HP Insight Rapid Deployment software Upgrade to Insight Control Environment, No Media, 1-Server License including 1 year of 24x7 Technical Support and Updates — 453485-B22
NOTE: For use in environments where Insight Rapid Deployment software (RDP) is already installed and licensed on ProLiant ML, DL or BL servers.
NOTE: This option does not include RDP licenses.

HP Insight Server Migration software for ProLiant

HP Insight Server Migration software for ProLinat, No Media, Physical / Virtual to ProLiant Single Migration License, including 1 year of 24x7 Technical Support and Updates — 460750-B21
NOTE: This license allows 1 physical to ProLiant or virtual to ProLiant migration. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.

HP Insight Server Migration software for ProLiant, No Media, Physical / Virtual to Virtual Single Migration License, including 1 year of 24x7 Technical Support and Updates — 460753-B21
NOTE: This license allows 1 physical to virtual or virtual to virtual migration. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.

HP Insight Server Migration software for ProLiant, No Media, 1-Year Unlimited Migration License, including 1 year of 24x7 Technical Support — 460756-B21
NOTE: This license allows unlimited migrations (physical to ProLiant, physical to virtual, virtual to virtual, and virtual to ProLiant) for one year. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.

NOTE: For additional License Kits, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12855_div/12855_div.html

Monitor

HP Insight Dynamics-VSE suite for ProLiant

HP Insight Dynamics-VSE suite for ProLiant with Insight Control Environment, 1-server license including 1 year of 24x7 Technical Support and Updates — 483527-B21
NOTE: This license supports HP ProLiant ML/DL and c-Class Blade servers. Customer will receive a printed license entitlement certificate via physical shipment.

HP Insight Dynamics-VSE suite for ProLiant without Insight Control Environment, 1-server license including 1 year of 24x7 Technical Support and Updates — 483531-B21
NOTE: This license supports HP ProLiant ML/DL and c-Class Blade servers. Customer will receive via email a receipt and link to a license entitlement certificate.

NOTE: For additional License Kits, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/13050_div/13050_div.html

Control

HP Integrated Lights-Out Advanced Pack

Additional Options

	HP Integrated Lights-Out Advanced Pack, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.html	512485-B21
	Optimize	
	HP Insight Virtual Machine Manager software for ProLiant	
	HP Insight Virtual Machine Manager software for ProLiant, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates NOTE: Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12328_div/12328_div.html NOTE: Flexible and volume quantity license kits are available for Value Packs. Refer to: http://www.hp.com/servers/proliantessentials or the various QuickSpecs for more information.	452153-B21
Port Options	Internal USB Kit	451363-B21
	Serial/Parallel Port OPT KIT	401222-B21
Storage Controllers	SAS Controllers	
	Smart Array E200 Controller NOTE: The HP Smart Array E200 Controllers require the purchase of the HP HBA SAS-SATA 4x1LN Cable Kit (PN: 452130-B21).	
	HP Smart Array E200/128 BBWC Controller	411508-B21
	128-MB BBWC (Battery-Backed Write Cache) Enabler NOTE: Supports the Smart Array E200 Controller, Smart Array 641 Controller, Smart Array 642 Controller.	351580-B21
	Smart Array E500 Controller	
	HP Smart Array E500/256MB Controller	435129-B21
	HP SA-P400 and SA-E500 24 In Battery Cable Kit NOTE: This option kit contains a 24" battery cable and adhesive material for installing a batter into the server if a Smart Array E500 is integrated outside of the factory. For all solutions, please refer to the server QuickSpecs and User's Manual for detailed installation instructions.	417836-B21
	Smart Array P400 Controller NOTE: The HP Smart Array P400 Controllers require the purchase of the HP HBA SAS-SATA 4x1LN Cable Kit (452130-B21).	
	HP Smart Array P400/256MB Controller	405132-B21
	HP Smart Array P400/512MB BBWC Controller	411064-B21
	HP SA-P400 and SA-E500 24 In Battery Cable Kit NOTE: This option kit contains a 24" battery cable and adhesive material for installing a batter into the server if a Smart Array P400 is integrated outside of the factory. For all solutions, please refer to the server QuickSpecs and User's Manual for detailed installation instructions.	417836-B21

Additional Options

Battery-backed write cache upgrade NOTE: Battery only. For Smart Array P400 Controller only.	383280-B21
512MB Battery-backed write cache upgrade NOTE: For Smart Array P400 Controller only.	405148-B21
HP ProLiant P800 Controller	
HP Smart Array P800/512MB BBWC Controller	381513-B21
NOTE: Please see the following QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12460_div/12460_div.html (Smart Array E200 Controller) http://h18000.www1.hp.com/products/quickspecs/12700_div/12700_div.html (Smart Array E500 Controller) http://h18000.www1.hp.com/products/quickspecs/12400_div/12400_div.html (Smart Array P400 Controller) http://h18000.www1.hp.com/products/quickspecs/12616_div/12616_div.html (Smart Array P800 Controller)	
SAS HBA	
HP SC08Ge Host Bus Adapter	488765-B21
HP SC44Ge Host Bus Adapter NOTE: When using the SC44Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required. Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS.	416096-B21
HP 8 Internal Port SAS HBA with RAID NOTE: The HP SC44Ge HBA and HP 8 Internal Port SAS HBA with RAID require the purchase of the HP HBA SAS-SATA 4x1LN Cable Kit (452130-B21). NOTE: Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS.	347786-B21
HP HBA SAS-SATA 4x1LN Cable Kit NOTE: This option is required for any internal port HBA or controller that has a standard 4 port SAS/SATA connector.	452130-B21
NOTE: Please see the following QuickSpecs for Technical Specifications and additional information: http://h18004.www1.hp.com/products/quickspecs/13082_div/13082_div.html (SC80Ge HBA) http://h18004.www1.hp.com/products/quickspecs/12617_div/12617_div.html (SC44Ge HBA) http://h18000.www1.hp.com/products/quickspecs/12332_div/12332_div.html (8 Internal Port SAS HBA)	
SCSI Controllers NOTE: The HP ProLiant DL320 G5p PCI-X Option Kit is required for all PCI -X Controllers.	
Smart Array 6404/256 Controller NOTE: For External drive support only	273914-B21
Smart Array 6402/128 Controller NOTE: For External drive support only	273915-B21
Smart Array 642 Controller NOTE: For External drive support only	291967-B21
128-MB BBWC (Battery-Backed Write Cache) Enabler NOTE: Supports the Smart Array E200 Controller, Smart Array 641 Controller, Smart Array 642 Controller.	351580-B21

Additional Options

	64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 NOTE: For External drive support only	374654-B21
	SCSI HBA	
	HP SC11Xe Host Bus Adapter	412911-B21
	NOTE: Please see the following QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/11587_div/11587_div.html (Smart Array 6400 Series) http://h18000.www1.hp.com/products/quickspecs/12069_div/12069_div.html (Smart Array 642) http://h18000.www1.hp.com/products/quickspecs/11943_div/11943_div.html (HP Single Channel Ultra320 SCSI HBA) http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html (SC11Xe HBA)	
Tape Drives	NOTE: For the complete listing of Tape Drive offerings, please see: http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html	
	USB Rack-Mount Tape Solutions	
	HP StorageWorks 1U USB Rack-Mount Kit with one DAT 160 USB Tape Drive NOTE: Pre-configured with one DAT 160 USB tape drive.	AG703A
	SAS Rack-Mount Tape Solutions NOTE: HP recommends purchasing the HP SC44Ge HBA (416096-B21) for a dedicated SAS HBA for tape.	
	HP StorageWorks 1U SAS Rack-Mount Kit with one LTO-4 Ultrium 1760 NOTE: Pre-configured with one LTO-4 Ultrium 1760 SAS tape drive.	
	HP StorageWorks 1U SAS Rack-Mount Kit NOTE: Supports up to (2) half-height SAS tape drives.	AE459A
	HP StorageWorks DAT 160 SAS Internal Tape Drive NOTE: Mounts inside the 1U SAS Rack-Mount Kit (AE459A)	Q1587A
	HP StorageWorks LTO-2 Ultrium 448 SAS Internal Tape Drive NOTE: Mounts inside the 1U SAS Rack-Mount Kit (AE459A)	DW085A
	HP StorageWorks LTO-3 Ultrium 920 SAS Internal Tape Drive NOTE: Mounts inside the 1U SAS Rack-Mount Kit (AE459A)	EH847A
	SCSI Rack-Mount Tape Solutions NOTE: SCSI Controller required. HP recommends purchasing the HP SC11Xe HBA (412911-B21) for a dedicated SCSI HBA for tape.	
	HP StorageWorks 1U SCSI Rack-mount kit with one LTO-2 Ultrium 448 SCSI Tape Drive (Carbonite) NOTE: Pre-configured with one LTO-2 Ultrium 448 SCSI tape drive.	DW028B
	HP StorageWorks 1U SCSI Rack-mount kit with one LTO-3 Ultrium 920 NOTE: Pre-configured with one LTO-3 Ultrium 920 SCSI tape drive.	EH903A
	HP StorageWorks 3U SCSI Rack-Mount with 1 LTO-4 Ultrium 1840 Tape Drive NOTE: Pre-configured with one LTO-4 Ultrium 1840 SCSI tape drive.	EH926A
	NOTE: For an up-to-date listing of the latest O/S and software support details for HP Ultrium tape drives, please visit: http://www.hp.com/go/connect.	

Additional Options

Disk-Based Backup	RDX Removable Disk Backup	
	HP StorageWorks RDX160 External Removable Disk Backup System NOTE: 160GB of Disk Storage	AJ766A
	HP StorageWorks RDX320 External Removable Disk Backup System NOTE: 320GB of Disk Storage	AJ768A
	HP StorageWorks RDX500 External Removable Disk Backup System NOTE: 500GB of Disk Storage	AJ935A
	NOTE: Please see the HP RDX Removable Disk Backup System QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13036_div/13036_div.html	
	D2D Backup	
	HP StorageWorks D2D120 Backup System with Data Protector Express Software Kit NOTE: 2TB of Disk Storage.	EH924A
	HP StorageWorks D2D130 Backup System with LTO-3 Ultrium 920 SAS Tape Drive NOTE: 3TB of Disk Storage.	EH952A
	HP StorageWorks D2D2503i Backup System NOTE: 3TB of Disk Storage	EH945A
	HP StorageWorks D2D4004i Backup System NOTE: 4.5TB of Disk Storage	EH938A
	NOTE: Please see the HP D2D Backup Systems QuickSpecs for additional information: http://www.hp.com/go/d2d.	

Tape Autoloaders	HP StorageWorks DAT Autoloader	
	HP StorageWorks DAT 72x10 tape autoloader	AE313B
	HP StorageWorks 1/8 G2 Tape Autoloader	
	HP StorageWorks 1/8 G2 LTO-4 Ultrium 1760 SAS Tape Autoloader	AK377A
	HP StorageWorks 1/8 G2 LTO-3 Ultrium 920 SAS Autoloader	AH558A
	HP StorageWorks 1/8 G2 LTO-2 Ultrium 448 Tape Autoloader	AH164A
	HP StorageWorks 1/8 G2 Tape Autoloader Rack Kit NOTE: Required to install the 1/8 G2 Autoloaders in a standard 19-inch rack; includes rails and rackmount instructions	AH166A
	NOTE: Please reference the Tape Autoloader QuickSpecs at: http://www.hp.com/go/automation for additional information needed to create a complete solution.	

Additional Options

Tape Libraries	HP StorageWorks MSL2024 Tape Library	
	HP StorageWorks MSL2024 1 LTO-4 Ultrium 1840 SCSI Drive Library	AJ033A
	HP StorageWorks MSL2024 1 LTO-4 Ultrium 1760 SAS Drive Library	AK378A
	HP StorageWorks MSL2024 1 LTO-3 Ultrium 960 SCSI Drive Library	AG115A
	HP StorageWorks MSL2024 1 LTO-3 Ultrium 920 SAS Drive Library	AH559A
	HP StorageWorks MSL2024 1 LTO-2 Ultrium 448 SCSI Drive Library	AG116A
	HP StorageWorks MSL4048 Tape Library	
	HP StorageWorks MSL4048 1 LTO-4 Ultrium 1840 SCSI Drive Library	AJ035A
	HP StorageWorks MSL4048 2 LTO-4 Ultrium 1760 SAS Drive Library	AK380A
	HP StorageWorks MSL4048 1 LTO-3 Ultrium 960 SCSI Drive Library	AG322A
	HP StorageWorks MSL4048 1 LTO-3 Ultrium 920 SAS Drive Library	AH560A
	NOTE: Please reference the MSL Tape Library QuickSpecs at: http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at: http://www.hp.com/go/ebs.	
High Availability Cluster Options	HP Serviceguard for Linux	
	HP Serviceguard for Linux on HP ProLiant and other third-party x86 Servers - Physical Media Kit NOTE: This kit contains media only.	519353-B21
	HP Serviceguard for Linux on HP ProLiant and other third-party x86 Servers Single-Server License Licensed per Server NOTE: This license allows Serviceguard for Linux to be installed on 1 server. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.	519354-B21
	HP Serviceguard for Linux - Flexible-Quantity License (for HP ProLiant and other third-party x86 servers) Licensed per Server NOTE: This part number can be used to purchase multiple licenses with a single activation key. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.	519355-B21
	HP Serviceguard Linux Oracle Database Toolkit for HP ProLiant/x86 Servers Licensed per cluster Includes media and One Year 24x7 Software Support & Updates	463833-B21
	HP Serviceguard Extension for SAP on Linux for HP ProLiant/x86 Servers Licensed per physical server Includes media and One Year 24x7 Software Support & Updates	463834-B21
	HP Serviceguard Linux Extended Distance Cluster (XDC) for HP ProLiant/x86 Servers Licensed per physical server Includes media and One Year 24x7 Software Support & Updates	463835-B21
	NOTE: The above is not a complete list of all HP Serviceguard for Linux product numbers For a detailed list of supported configuration/certification options for HP Serviceguard for Linux please refer to the HP Serviceguard for Linux Configuration &	

Additional Options

	Ordering Guide available at: http://www.hp.com/go/sglx/info. NOTE: HP Serviceguard for Linux products running on x86 platforms now include one year of 24 x 7 Software Technical Support and Updates. Please see the Support Information section of the HP Serviceguard for Linux QuickSpecs for details. NOTE: For additional information including a complete list of Product Numbers for HP Serviceguard for Linux, please see the following QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11518_div/11518_div.html (Worldwide)	
HP StorageWorks 30 Modular Smart Array	HP StorageWorks Modular Smart Array 30 SB NOTE: Rack-mountable 14 drive enclosure with single bus, redundant power supplies	302969-B21
	HP StorageWorks Modular Smart Array 30 DB NOTE: Rack-mountable 14 drive enclosure with dual bus, redundant power supplies	302970-B21
	NOTE: Please see the Modular Smart Array 30 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: http://h18000.www1.hp.com/products/quickspecs/11738_div/11738_div.html (Worldwide)	
HP StorageWorks 60 Modular Smart Array	HP StorageWorks 60 Modular Smart Array NOTE: Please see the Modular Smart Array 60 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: http://h18000.www1.hp.com/products/quickspecs/12627_div/12627_div.html	418408-B21
HP StorageWorks 70 Modular Smart Array	HP StorageWorks 70 Modular Smart Array NOTE: Please see the Modular Smart Array 70 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: http://h18000.www1.hp.com/products/quickspecs/12652_div/12652_div.html	418800-B21
HP StorageWorks 2000sa Modular Smart Array	HP 2012sa Single Controller Modular Smart Array	AJ752A
	HP 2012sa Dual Controller Modular Smart Array NOTE: Please see the Modular Smart Array 2000sa QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/13045_div/13045_div.html (Worldwide)	AJ753A

Additional Options

StorageWorks Options	NOTE: The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see: http://h18006.www1.hp.com/storage/saninfrastructure/hba.html	
	HP StorageWorks FC2142SR 4Gb PCI-e HBA	A8002A
	HP StorageWorks FC2242SR Dual Channel 4 Gb PCI-e HBA	A8003A
	HP StorageWorks FC1142SR 4Gb PCI-e HBA	AE311A
	HP StorageWorks FC1242SR Dual Channel 4 Gb PCI-e HBA	AE312A
	HP StorageWorks FC2143 4Gb PCI-X 2.0 -to-Fibre Channel HBA	AD167A
	HP StorageWorks FC2243 Dual Channel 4Gb PCI-X 2.0 HBA	AD168A
	HP StorageWorks FC1143 4Gb PCI-X 2.0 HBA	AB429A
	HP StorageWorks FC1243 Dual Channel 4Gb PCI-X 2.0 HBA	AE369A
	HP StorageWorks 8 Gb Simple SAN Connection Kit	AK241A
	HP StorageWorks 8/20q Fibre Channel Switch	AK242A
	HP StorageWorks 81E 8Gb SP PCI-e FC HBA	AJ762A
	HP 82E 8Gb Dual-port PCI-e FC HBA	AJ763A
	HP 82Q 8Gb Dual Port PCI-e FC HBA	AJ764A
	HP StorageWorks 81Q PCI-e FC HBA	AK344A
	StorageWorks SCSI HBA	
	HP U320e SCSI Host Bus Adapter	AH627A
	NOTE: Recommended Dual Channel Ultra320 SCSI Controller for connecting multi-drive MSL tape libraries to ProLiant servers.	
Uninterruptible Power Systems – Rack	HP R1500 G2 UPS	
	HP, R1.5kVA UPS, 1U, NA	AF419A
	HP, R1.5kVA UPS, 1U, INTL	AF418A
	HP, R1.5kVA UPS, 1U, JPN/TW	AF421A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/12507_div/12507_div.html	
	HP R3000 UPS	
	HP R3000 VA UPS, 2U, DTC, INTL	AF414A
	HP R3000 VA UPS, 2U, Low Voltage L5-30, NA	AF422A
	HP R3000 VA UPS, 2U, High Voltage L6-20, NA	AF423A
	HP R3000 VA UPS, 2U, High Voltage L6-20, JPN	AF424A
	HP R3000 VA UPS, 2U, Low Voltage L5-30, JPN	AF425A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/10671_div/10671_div.html	
	HP R3000v Uninterruptible Power System	
	HP R3000v UPS	AF444A
	NOTE: The R3000v is available in China and India only.	
	NOTE: Please see UPS QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13129_div/13129_div.html (Worldwide)	
	HP Rack-Mountable R5500 UPS	
	HP R5500 VA UPS, INTL	AF416A

Additional Options

	HP R5500 VA UPS, NA/JPN	AF426A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/11871_div/11871_div.html (Worldwide)	
	NOTE: For additional information on HP Uninterruptible Power Systems please go to: www.hp.com/servers/rackups.	
USB Options	USB 1.44-MB External Diskette Drive (Carbonite)	DC141B
	HP 1GB USB 2.0 Floppy Drive Key	442085-B21
Rack Kit	Rack Adapter Kit	332815-B21
	NOTE: This kit allows HP rack servers to fit in racks that are 24" wide.	
HP Rack 5000 Series (Metallic Carbonite)	HP 5642 Rack-Unassembled	358254-B21
	NOTE: Please see the HP Rack 5642 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/12074_div/12074_div.html (Worldwide)	
	NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.	
HP Rack 10000 G2 Series (Graphite Metallic)	10642 G2 (42U) Rack Cabinet – Pallet	AF001A
	10642 G2 (42U) Rack Cabinet – Shock Pallet	AF002A
	10642 G2 (42U) Rack Cabinet – Crated	AF003A
	10642 G2 (42U) Rack Cabinet, with Extension – Shock Pallet	AF004A
	10636 G2 (36U) Rack Cabinet – Pallet	AF011A
	10636 G2 (36U) Rack Cabinet – Shock Pallet	AF012A
	10636 G2 (36U) Rack Cabinet – Crated	AF013A
	10636 G2 (36U) Rack Cabinet, with Extension – Shock Pallet	AF014A
	10622 G2 (22U) Rack Cabinet - Pallet	AF021A
	10622 G2 (22U) Rack Cabinet - Shock Pallet	AF022A
	10842 G2 (42U) 800mm Wide Rack Cabinet - Pallet	AF041A
	10842 G2 (42U) 800mm Wide Rack Cabinet - Shock Pallet	AF042A
	10647 G2 (47U) Rack Cabinet - Pallet	AF031A
	HP S10614 (14U) Rack Cabinet - Shock Pallet	292302-B22
	10647 G2 (47U) Rack Cabinet 1200mm Deep - Shock Pallet	AF044A
	NOTE: Due to handling and shipping requirements, AF044A is only orderable through HP Factory Express. It is not for direct sales. Customer site surveys are required before an order is approved. CTO orders may require additional lead time.	
	10647 G2 (47U) Rack Cabinet 1200mm Deep - Pallet	AF045A
	NOTE: xxxxxx-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels).	
	NOTE: It is mandatory to use a shock pallet in order to ship racks with equipment installed.	

Additional Options

NOTE: Please see the Rack 10000 G2 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/12402_div/12402_div.html (Worldwide)

NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.

Monitors and Keyboards	TFT7600 Rackmount Keyboard Monitor US	AG052A
	TFT7600 Rackmount Keyboard Monitor UK	AG053A
	TFT7600 Rackmount Keyboard Monitor GR	AG054A
	TFT7600 Rackmount Keyboard Monitor FR	AG055A
	TFT7600 Rackmount Keyboard Monitor IT	AG056A
	TFT7600 Rackmount Keyboard Monitor SP	AG057A
	TFT7600 Rackmount Keyboard Monitor DEN	AG058A
	TFT7600 Rackmount Keyboard Monitor NOR	AG059A
	TFT7600 Rackmount Keyboard Monitor SE/FI	AG060A
	TFT7600 Rackmount Keyboard Monitor SWI	AG061A
	TFT7600 Rackmount Keyboard Monitor PORT	AG062A
	TFT7600 Rackmount Keyboard Monitor BEL	AG063A
	TFT7600 Rackmount Keyboard Monitor JPN2	AG064A
	TFT7600 Rackmount Keyboard Monitor RUS	AG065A
	TFT7600 Rackmount Keyboard Monitor INTL	AG066A
	1U Rackmount Keyboard with USB, US	AG072A
	1U Rackmount Keyboard with USB, UK	AG073A
	1U Rackmount Keyboard with USB, GR	AG074A
	1U Rackmount Keyboard with USB, FR	AG075A
	1U Rackmount Keyboard with USB, ITL	AG076A
	1U Rackmount Keyboard with USB, SP	AG077A
	1U Rackmount Keyboard with USB, DEN	AG078A
	1U Rackmount Keyboard with USB, NOR	AG079A
	1U Rackmount Keyboard with USB, SE/FI	AG080A
	1U Rackmount Keyboard with USB, SWI	AG081A
	1U Rackmount Keyboard with USB, PORT	AG082A
	1U Rackmount Keyboard with USB, BEL	AG083A
	1U Rackmount Keyboard with USB, JPN2	AG084A
	1U Rackmount Keyboard with USB, RUS	AG085A
	1U Rackmount Keyboard with USB, INTL	AG086A

NOTE: For additional information regarding Rack Options, please see the following URL: http://www.hp.com/go/rackandpower.

Additional Options

HP KVM Switch Options	2x1x16 IP Console Switch with Virtual Media	AF601A
	4x1x16 IP Console Switch with Virtual Media	AF602A
	PS/2 Virtual Media Interface Adapter, 1 pack NOTE: Requires PS/2 and one USB port on server.	AF604A
	Server console switch 0x2x8	AF616A
	Server console switch 0x2x16	AF617A
	PS/2 Interface Adapter, 1 pack	262588-B21
	PS/2 Interface Adapter, 8 pack	262587-B21
	NOTE: Cat5e cables are required to connect Interface Adapters to Console Switches. Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm.	
	HP 1x4 Console Switch	AF611A
	PS2 Server Console Cable, 6 ft, 2 pack	AF612A
	USB Server Console Cable, 6 ft, 2 pack	AF613A
	NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm.	
HP Serial Console Server Options	HP 16 Port Serial Console Server (worldwide)	AF101A
	HP 48 Port Serial Console Server (worldwide)	AF102A
	Serial Adapter, RJ45-DB9 DCE Female, 1 Pack	AF103A
	Serial Adapter, RJ45-DB9 DCE Female, 8 Pack	AF110A
	NOTE: Cat5e cables are required to connect Serial Adapters to Serial Console Servers. Additional Serial Adapters and Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm.	
	NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm.	
Service and Support Offerings (HP Care Pack Services)	Hardware Services On-site Service	
	Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic	U4479E
	4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	U4480E
	4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	U4481E
	6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	U4482E
	Installation & Start-up Services	
	Hardware Installation, Electronic	U4490E
	Installation & Start-Up of a ProLiant server and Microsoft or Linux O/S per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excl. HP holidays, Electronic	U4491E
	Support Plus	
	Onsite HW support, 8am-9pm, M-F, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays, Electronic	U4492E
	Support Plus 24	

Additional Options

Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	U4493E
Onsite HW support 24x7, 4hr response and SuSE Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic.	U6309E
Onsite HW support 24x7, 4hr response and Red Hat ES Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic.	U8331E

NOTE: For more information, customer/resellers can contact: http://www.hp.com/hps/

Memory

HP ProLiant DL320 G5p Models

Standard Memory

NOTE: One of the following depending on model:

1 GB installed (1 x 1 GB SDRAM DIMM) on Dual-Core (3075 and E3110) models.

2 GB installed (2 x 1 GB SDRAM DIMMs) on Quad-Core (X3320 and X3210) models.

Standard Memory Plus Optional Memory

Up to 8 GB memory is available with the optional installation of PC2-6400 ECC DDR2 SDRAM Memory kits.

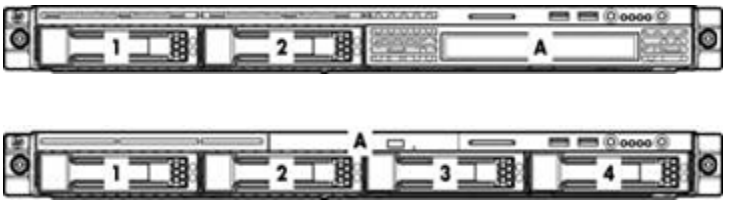
NOTE: The chart below does not represent all possible configurations. For best performance, HP recommends dual-bank interleaved mode configurations. For dual-bank interleaved mode, DIMMs must be installed in both banks with equal bank capacities.

Memory		Slot				
		1A	2B	3A	4B	Mode
Optional	512 MB	512 MB	Empty	Empty	Empty	Single-bank
Standard	1 GB	1 GB	Empty	Empty	Empty	Single-bank
Optional	1 GB	512 MB	Empty	512 MB	Empty	Single-bank interleaved
Standard	2 GB	1 GB	Empty	1 GB	Empty	Single-bank interleaved
Maximum	8 GB	2 GB	2 GB	2 GB	2 GB	Dual-bank interleaved

Following are memory options available from HP:

2 GB Unbuffered PC2-6400 ECC DIMM (1 x 2 GB)	450260-B21
1 GB Unbuffered PC2-6400 ECC DIMM (1 x 1 GB)	450259-B21
512 MB Unbuffered PC2-6400 ECC DIMM (1 x 512 MB)	450258-B21

Storage



1- 2 Two SATA or SAS drive bays

A Optical Drive Bay: Optional 12.7mm DVD-ROM, or DVD-RW drive

1- 4 Four SATA or SAS drive bays

A Optical Drive Bay: Optional 9.5mm DVD-ROM, or DVD-ROM/CD-RW Combo drive

Drive Support

	Quantity Supported	Position Supported	Controller
Removable Media			
2 Drive Models: 12.7mm IDE DVD-ROM or DVD-RW Drive	Up to 1	A	HP embedded SATA Controller
4 Drive Models: 9.5mm IDE DVD-ROM or DVD-ROM/CD-RW Combo Drive	Up to 1	A	HP embedded SATA Controller
HP Slim SATA DVD-ROM Optical Drive HP Slim SATA DVD RW Optical Drive	Up to 1	A	HP embedded SATA Controller

Hard Drives

NOTE: Transfer rates of drives are dependent on the maximum transfer rate supported by the HBA or Controller. Refer to the HBA or Controller technical specifications for details.

SAS Hot Plug 3.5" Enterprise (ENT) Drives

	Quantity Supported	Position Supported	Controller
450GB 3G SAS 15K DP 400GB 3G SAS 10K DP 300GB 3G SAS 15K SP 300GB 3G SAS 15K DP 146GB 3G SAS 15K SP 146GB 3G SAS 15K DP 72GB 3G SAS 15K SP 72GB 3G SAS 15K DP	Up to 2 Up to 4 NOTE: depending on model.	1-2 1-4 NOTE: depending on model.	HP embedded 4 Port SATA Controller with RAID 0/1 support HP SC44Ge Host Bus Adapter NOTE: When using the SC44Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required. Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS. HP 8 Internal Port SAS HBA with RAID NOTE: Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS. HP Smart Array E200/128 BBWC Controller HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller HP Smart Array P800/512MB BBWC Controller

SAS Hot Plug 3.5" Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
1TB 7.2K DP SAS 750GB 7.2K DP SAS	Up to 2 Up to 4 NOTE: depending on	1-2 1-4 NOTE: depending on	HP embedded 4 Port SATA Controller with RAID 0/1 support HP SC44Ge Host Bus Adapter NOTE: When using the SC44Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required. Transfer rate: 1.5 Gb/s SATA, 3

Storage

	model.	model.	Gb/s SAS. HP 8 Internal Port SAS HBA with RAID NOTE: Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS. HP Smart Array E200/128 BBWC Controller HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller HP Smart Array P800/512MB BBWC Controller

SATA Hot Plug Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
1TB 1.5G SATA 7.2K 750GB 1.5G SATA 7.2K 500GB 1.5G SATA 7.2K 250GB 1.5G SATA 7.2K	Up to 2 Up to 4 NOTE: depending on model.	1-2 1-4 NOTE: depending on model.	HP SC44Ge Host Bus Adapter NOTE: When using the SC44Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required. Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS. HP 8 Internal Port SAS HBA with RAID NOTE: Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS. HP Smart Array E200/128 BBWC Controller HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller HP Smart Array P800/512MB BBWC Controller

SATA Hot Plug Entry (ETY) Drives

	Quantity Supported	Position Supported	Controller
160GB 1.5G SATA 7.2K	Up to 4	1-4	HP SC44Ge Host Bus Adapter NOTE: When using the SC44Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required. Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS. HP 8 Internal Port SAS HBA with RAID NOTE: Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS. HP Smart Array E200/128 BBWC Controller HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller HP Smart Array P800/512MB BBWC Controller

3.5" SATA Hot Plug Drives

	Quantity Supported	Position Supported	Controller
750GB 1.5G SATA 7.2K 500GB 1.5G SATA 7.2K 250GB 1.5G SATA 7.2K 160GB 1.5G SATA 7.2K	Up to 4	1-4	HP SC44Ge Host Bus Adapter NOTE: When using the SC44Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required. Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS. HP 8 Internal Port SAS HBA with RAID NOTE: Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS. HP Smart Array E200/128 BBWC Controller HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller HP Smart Array P800/512MB BBWC Controller

Storage

NOTE: Hot plug capability and drive LED status support requires installation of one of the controllers or HBAs listed above.

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
30 Modular Smart Array	Up to 14	External	Smart Array 6402/128 Controller Smart Array 642 Controller
60 Modular Smart Array	Up to 8	External	HP Smart Array P800/512 BBWC Controller HP Smart Array E500/256MB Controller
70 Modular Smart Array	Up to 4	External	HP Smart Array P800/512 BBWC Controller HP Smart Array E500/256MB Controller
HP 2000sa Modular Smart Array Controller	Up to 4	External	HP SC08Ge Host Bus Adapter

Maximum Storage Capacity – (SAS drives)

Internal	600GB (2 x 300GB SAS)
External	4.20TB (1 x (14 x 300GB SAS))
Total	4.80TB

NOTE: In order to implement integrated SATA RAID with Smart Start 7.90 on Windows 2000/2003, the use of a floppy drive is necessary.

Maximum Storage Capacity – (SATA Drives)

Internal	4TB (4 x 1TB SATA)
External	12TB (1 x (12 x 1TB SATA))
Total	16TB

NOTE: In order to implement integrated SATA RAID with Smart Start 7.90 on Windows 2000/2003, the use of a floppy drive is necessary.

NOTE: The External capacity section relates to the HP StorageWorks Modular Smart Array 20.

Tape and Disk-Based Backup

NOTE: For a complete listing of compatible tape and disk-based backup offerings, please visit: www.hp.com/go/connect

	Position Supported	Controller	Controller Part Number
HP StorageWorks SCSI Tape Drives, External LTO-1 Ultrium 232 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-3 Ultrium 960 LTO-4 Ultrium 1760 LTO-4 Ultrium 1840 DAT 40 DAT 72 DAT 160 1U Rack-Mount Kit	External	HP SC11Xe Host Bus Adapter	412911-B21

Storage

3U Rack-Mount Kit

HP StorageWorks USB Tape Drives, External DAT 40 USB DAT 72 USB DAT 160 USB 1U USB Rack-Mount Kit	External	USB 2.0 Port	N/A
HP StorageWorks SAS Tape Drives, External DAT 160 SAS LTO-2 Ultrium 448 SAS LTO-3 Ultrium 920 SAS LTO-4 Ultrium 1760 SAS LTO-4 Ultrium 1840 SAS 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP SC44Ge Host Bus Adapter	416096-B21
HP StorageWorks SCSI Tape Automation, External DAT 72x10 Autoloader 1/8 G2 Tape Autoloader MSL2024 MSL4048 MSL8096 MSL6000	External	HP SC11Xe Host Bus Adapter	412911-B21
		HP U320e SCSI Host Bus Adapter NOTE: Recommended for MSL tape libraries.	AH627A
HP StorageWorks SAS Tape Automation, External 1/8 G2 Autoloader MSL2024 MSL4048	External	HP SC44Ge Host Bus Adapter	416096-B21
HP StorageWorks Fibre Tape Automation, External MSL2024 MSL4048 MSL8096 MSL6000	External	Please consult the EBS connectivity matrix at: http://www.hp.com/go/ebs for detailed connectivity information.	N/A
HP StorageWorks RDX Removable Disk Backup System RDX160 RDX320 RDX500	External	USB 2.0 Port	N/A
HP StorageWorks D2D	External	Embedded Network Controller	N/A

Storage

Backup Systems
D2D120
D2D130
D2D2503i
D2D4004i

System Unit	Dimensions (H x W x D) (with bezel)	1.70 x 17.64 x 26.85 in (4.32 x 44.80 x 68.19 cm)	
	Weight (approximate)	Maximum (four hard drives, power supply, and processor installed)	33.50 lb (15.20kg)
		Minimum (one hard drive, power supply, and processor installed)	26.00lb (11.79kg)
	Input Requirements (per power supply)	Range Line Voltage	90 - 132 VAC, 180 - 264 VAC
		Rated Input Current	6 A (at 100 VAC), 3 A (at 200 VAC)
		Rated Input Frequency	47 to 63 Hz
		Rated Input Power	486 W (at 100 VAC), 479 W (at 200 VAC)
	BTU Rating	Maximum	1836 BTU/hr (at 100 VAC), 1706 BTU/hr (at 200 VAC)
	Power Specifications	NOTE: To review typical system power ratings use the HP Power Advisor which is available online located at url: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor - Click on the system of interest. Example: DL320 G5p - Follow the instructions of the next screens.	
	Power Supply Output (per power supply)	Rated Steady-State Power	400 W (at 100 VAC), 400 W (at 200 VAC)
		Maximum Peak Power	400 W (at 100 VAC), 400 W (at 200 VAC)
	System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
		Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed.

			Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
		Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Acoustic Noise	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	
		Idle	
		LWAd	6.30 B
		LpAm	52.07dBA
		Operating	
		LWAd	6.38 B
		LpAm	52.77 dBA
	Emissions Classification (EMC)	FCC Rating	Class A
		Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1
		NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.	
Power Supply	Input voltage specifications	Rated input voltage	100 VAC to 240 VAC
	Input Specifications	Rated input line	90 VAC to 264VAC
		Frequency range	47 to 63 Hz
		Rated input power	@ 115V input, Rated input power = 486W (assume output wattage=450W @ 230V input, Rated input power = 479W (assume output wattage=450W)
		Rated input current	6 A, 3 A (110 V, 220 V)
		Steady state power	420W (rated)
	BTU Rating	1710 BTU/hr	
	Ambient temperature range	Operating	50° to 118° F (10° to 48° C)
		Non-operating	-40° to 158° F (-40° to 70° C)
	Relative humidity (non-condensing)	Operating	55% to 85%
		Non-operating	5% to 95%
	Dielectric voltage withstand	Input to output	1800 VAC/minute
		Input to ground	1800 VAC/minute
	Maximum Wet Bulb Temperature	106.3° F (41.3° C)	

Technical Specifications

Integrated Serial ATA Controller	Simultaneous drive transfer channels	4 channels
	Transfer rate synchronous (maximum theoretical)	150 MB/s per channel
	Data transfer method	Intel® 82801IR Integrated Serial ATA Host Controller (non-RAID mode) Intel® 82801IR Integrated Serial ATA Host Controller (RAID Mode)
	Drive support	Serial ATA
	Data transfer modes	Legacy Mode Combined Mode
	Protocol	Serial ATA
	Feature	NCQ (Native Command Queuing); AHCI (Advanced Host Controller Interface)
	RAID levels supported	0, 1
	RAID Features	Supports multiple logical volumes Setup through ROM based Array Configuration Utility Installation scripting support NOTE: This controller does not support Hot Plug functions or LED functions.
	RAID OS Support	Microsoft Windows Server 2003 NOTE: In order to implement integrated SATA RAID with Smart Start 7.90 on Windows 2000/2003, the use of a floppy drive is necessary. Linux (Red Hat, SuSE, UnitedLinux)

Embedded NC326i Dual Port Gigabit Server Adapter	Network Interface	10Base-T/ 100Base-TX/ 1000Base-TX	
	Compatibility	IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX	
	Data Transfer Method	Four lane (x4), 100MHz PCI Express Reference Clock	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Half-Duplex)	100 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s
		1000Base-TX (Half and Full-Duplex)	2000 Mb/s
	Connector	RJ-45	
	Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
		10/100/1000Base-TX	Category 5 UTP; up to 328 ft (100 m)

Environment-friendly Products and Approach	End-of-life Management and Recycling	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

© Copyright 2009 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice.

Microsoft and Windows NT are US registered trademarks of Microsoft Corporation.

Intel, the Intel logo, Xeon and Xeon Inside are trademarks of Intel Corporation in the U.S. and other countries.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.